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Improve Reliability-Interchange Service Experience

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U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
WASHINGTON, DC 20590

GENERAL AVIATION AIRWORTHINESS ALERTS

The General Aviation Airworthiness Alerts provide a common communication channel through which the aviation community can economically interchange service experience and thereby cooperate in the improvement of aeronautical product durability, reliability, and safety. This publication is prepared from information submitted by those of you who operate and maintain civil aeronautical products. The contents include items that have been reported as significant, but which have not been evaluated fully by the time the material went to press. As additional facts such as cause and corrective action are identified, the data will be published in subsequent issues of the Alerts. This procedure gives Alerts' readers prompt notice of conditions reported via Malfunction or Defect Reports. Your comments and suggestions for improvement are always welcome. Send to: FAA; ATTN: Designee Standardization Branch (AFS-640); P.O. Box 25082; Oklahoma City, OK 73125-5029.

AIRPLANES

BEECH

Beech; Model C24R; Sierra; Erroneous Fuel Quantity Indication; ATA 2842

The pilot reported that turning on the landing lights, navigation lights, or the pitot heat caused both fuel quantity indicators to read "full."

During an investigation, it was determined that both wing assemblies were not "well grounded" to the fuselage which allowed voltage feedback through the ground of other electrical appliances. This problem was solved by the addition of ground wires between the fuselage and both main wing spars. The submitter suggested that flightcrews observe the fuel quantity indicators when operating other electrical equipment and report any defects.

Part total time-2,065 hours.

Beech; Model B35; Bonanza; Fuel Leak; ATA 2820

The pilot reported there was a fuel odor in the cockpit.

An investigation was conducted, and a leaking fuel supply line was discovered. The fuel line (P/N 35-924118) delivered fuel from the right fuel tank to the fuel selector valve. A "pin hole" leak was found in the line which was routed very close to the lower side of the cockpit floor. The submitter speculated that moisture was held between the floor and the fuel line which caused "pitting" corrosion and the "pin hole" leak. This area deserves close attention during routine maintenance and inspections.

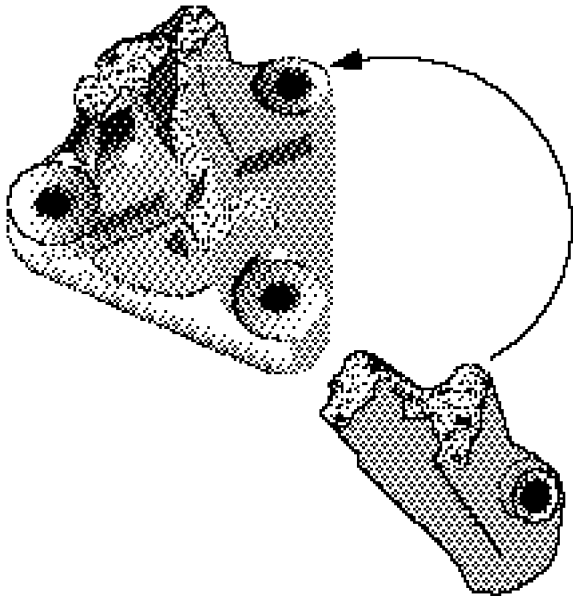
Part total time-7,023 hours.

Beech; Model M-35; Bonanza; Broken Engine Mount Brackets; ATA 7120

During an annual inspection, both engine mount brackets on the left side were found broken. (Refer to the following illustration.)

The broken brackets allowed the engine to sag to the left which caused further damage to the valve covers, cowling, and intake manifold. The engine mounts were checked 30 hours earlier during an engine oil change and were found to be serviceable. Since that check, the pilot did not notice any anomalies. The submitter suggests that special attention be given to the engine mount brackets (P/N TCM 626089) during scheduled inspections and maintenance. Any suspect brackets should be inspected further by using an appropriate nondestructive inspection technique.

Part total time-3,185 hours.



Beech; Model 58P; Baron; Elevator Hinge Bracket Damage; ATA 5552

During a scheduled inspection, the elevator inboard hinge bearings were found to be unserviceable.

While the bearings were being replaced, a crack was discovered in the upper right corner of the hinge bracket (P/N 95-610012-15). A dye-penetrant inspection revealed two other cracks on the hinge bracket. One originated from the upper right bracket adjustment hole and the other from the lower hole on the same side. Moderate corrosion was found on the back side of the hinge bracket. The submitter speculated that this defect may have been caused by overtorquing the attachment bolts and/or metal fatigue. This area should be closely inspected at every opportunity.

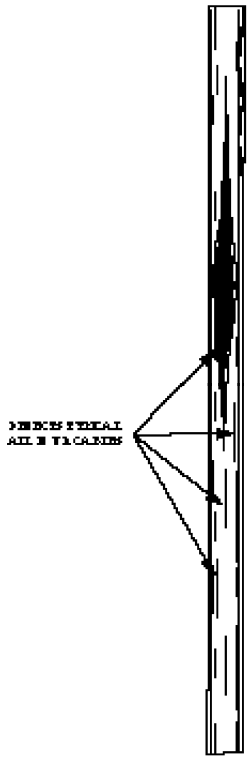
Part total time-2,086 hours.

Beech; Model C-90; King Air; Defective Electrical Wiring; ATA 2435

During a scheduled inspection, four defective electrical cables were discovered.

The submitter discovered deteriorated insulation shielding on the electrical cables that come from the left engine starter/generator (cable or wire P/N MS22759-8 and individual cables P/N's P10C4, P10A4, K2D4, and K2F4). The shielding had split lengthwise to the cables, and the center conductor was exposed at several locations. (Refer to the following illustration.) These cables carry high amperage. If the cables had shorted to ground, the resulting arc could easily have severed critical structural components of the aircraft as well as contributing to the danger of fire and explosion. These electrical cables should be inspected at every opportunity.

Part total time not reported.



Beech; Model E-90; King Air; Horizontal Stabilizer Skin Crack; ATA 5510

While changing the left horizontal stabilizer deice boot, a crack was discovered on the leading edge skin.

The crack was approximately .625 inch long and was located at station 63 on the leading edge skin (P/N 50-620001-53). It appeared the crack originated at a rivet hole and traveled outboard

and aft. The submitter did not offer a cause for this defect. The damaged area was removed and a flush patch was installed.

Part total time-5,794 hours.

Beech; Model E-90; King Air; Pneumatic Line Corrosion; ATA 3610

During a scheduled inspection, two pneumatic lines were discovered severely corroded.

Both lines (P/N's 90-970032-3 left and 90-970021-3 right) were just aft of the firewall. The corrosion was centered at the point where "Adell" clamps had been used to secure the lines. Due to the severity of corrosion damage, the lines were replaced. It was apparent that moisture and possibly other contaminants were held in contact with the metal lines by the rubber pad of the "Adell" clamps. Older and higher-time aircraft should be checked thoroughly for corrosion damage at every opportunity. One technique for inspecting metal lines, which are located under a clamp, is to slide the line exposing the area that was under the clamp. This technique depends on slack for movement of the line and the clamping pressure exerted by the clamp. Sometimes the line may be held in place by the elements of corrosion. If there is any doubt, take the clamp off for a proper inspection.

Part total time-5,755 hours.

Beech; Model B95A; Travel Air; Cabin Door Hinge Failure; ATA 5210

The pilot reported that during cruise flight a loud "bang" was heard followed immediately by the sound of rushing wind. The pilot slowed the aircraft speed and made a safe landing.

Maintenance personnel found the upper door hinge had broken allowing the top of the door to tilt outward approximately 6 inches into the airstream. The door was retained only by the lower hinge and the rear latch. The upper latch had released when the hinge failed. The submitter found evidence of intergranular corrosion on the broken hinge parts. The submitter suspected this caused the hinge to fail. Even though the hinge area is very difficult to inspect, it deserves the extra effort.

Part Total Time-3,510 hours.

Beech; Model 95B; Travel Air; Defective Carburetor Heat Box; ATA 7160

The right engine carburetor heat control jammed which caused the engine to run excessively rich. The engine was shut down, and the pilot made a safe single-engine landing.

The rivets attaching the weld assembly bushing (P/N 95-919112-19) to the carburetor air box (P/N 95-919114-19) had loosened the "butterfly" plate in the carburetor heat box lodged in the carburetor heat "on" position. The engine fuel mixture became excessively rich. This area deserves your full attention during scheduled inspections and maintenance.

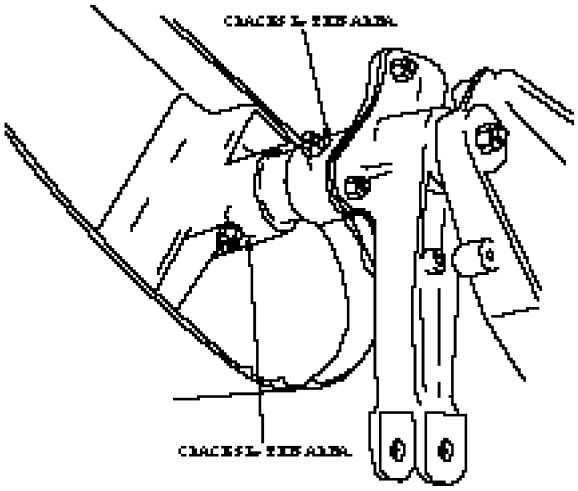
Part total time-8,269 hours.

Beech; Model C-99; Airliner; Elevator Torque Tube Cracks; ATA 5520

This report was submitted by a repair station which conducts inspections and maintenance on a fleet of these aircraft.

Beech Service Bulletin (SB) 2145 requires disassembly and inspection of the elevator torque tube assembly (P/N 115-610015-3) at 1,000-hour intervals. The area of concern, as stated by the submitter, is cracks adjacent to the two taper pin fasteners used on the torque tube assembly. (Refer to the following illustration.) The cracks appear to originate at the nut side of the fasteners and degraded the structural integrity of the assembly. The submitting operator has adjusted the inspection interval for the elevator torque tube assembly to every 100 hours of operation after the first 1,000-hour inspection that is required by SB 2145. The submitter stated that cracks seem to occur between 1,400 and 1,700 hours of operation. The submitter stated this defect may be caused by high frequency vibration.

Part total time-1,500 hours.



Beech; Model 200; King Air; Wing Rib Cracks; ATA 5712

During a scheduled inspection, four wing ribs and a stringer on the left wing were found cracked.

The rib damage was located at the point where the ribs attach to the stringer. The cracks traversed from a rivet hole forward to the rib leading edge. The submitter speculated this damage was caused by metal fatigue due to normal wing flexing over a prolonged period of time. High operating time or calendar time should be cause for a more detailed inspection of this area during scheduled inspections and maintenance.

Part total time-7,206 hours.

CESSNA

Cessna; Model 150M; Commuter; Excessively Rich Fuel Mixture; ATA 7322

The pilot reported that the engine mixture was excessively rich and could not be leaned for proper performance.

It was determined during an inspection that the carburetor (P/N MA3SPA/10-4894) had a brass float installed. The float assembly was slightly worn at the point where the needle valve contacted the adjustment tab. This wear was enough to cause the float level to be abnormally high causing a rich mixture problem. This carburetor was last overhauled in February 1992. Proper adjustment and checking for wear of parts should be accomplished at every opportunity.

Part total time-1,974 hours.

Cessna; Model 150M; Commuter; Throttle Cable Failure; ATA 7603

During an annual inspection, the submitter discovered that the entire engine throttle cable assembly moved in conjunction with movement of the cockpit control. The cable plastic covering was brittle and partially deteriorated.

The plastic covering on the throttle cable (P/N 51222-17) was brittle due to heat and age. (This aircraft was manufactured in 1975.) The submitter stated, “These original Cessna-supplied cables are all reaching the end of their service life.” Also, the submitter has found a similar defect on Cessna Model 172 aircraft.

Part total time-2,306 hours.

Cessna; Model 152; Aerobat; Defective Fuel Quantity System; ATA 2840

After a flight, the pilot reported that the fuel system required more fuel to fill the tanks than the fuel quantity system indicated.

After the aircraft was defueled, the fuel quantity indicators showed “1/8” for the left tank and “1/4” for the right tank. The maintenance records indicated that on December 18, 1997, the fuel quantity indicators had been installed as part of a kit (P/N SK152-21B) which replaced the original equipment. The problem source was found at the wing root connectors for the fuel quantity wiring. Although there was no apparent corrosion or damage, simply moving the connectors (wiggling the two halves) caused the quantity indications to vary significantly. After cleaning the connectors, the system functioned properly. It is surprising that such a slight connection problem could cause such an erroneous indication. It would be much safer if the indicators indicated less than actual fuel quantity. The submitter stated this was the second aircraft in the fleet they maintain to experience this condition.

Part total time-42 hours.

Cessna; Model 172R; Firewall Crack; ATA 5412

During a 100-hour inspection, a crack was found in the firewall.

The crack was located in the area of the lower left cowling shock mount. This area is just below the aircraft battery box. From the engine side of the firewall the crack appeared to be approximately .5 inch long. A closer examination from the cabin side of the firewall disclosed the crack was approximately 3 inches long and originated from a rivet hole. The crack was repaired by the installation of a doubler. The submitter speculated this damage was caused by "improper sheet metal practices." Structural anomalies of the firewall may result in a very hazardous operational condition. This area deserves close scrutiny and prompt repair.

Part total time not reported.

Cessna; Model 172RG; Cutlass; Defective Landing Gear Position Indication; ATA 3260

During an approach for landing, the gear handle was placed in the "down" position. The landing gear extension appeared to be normal; however, the green indicator light did not illuminate. The pilot cycled the gear several times; however, the light did not illuminate. The pilot made a safe landing.

While the landing gear system was being inspected, the right main gear "down-and-locked" switch (P/N S2088-1) was found severely corroded. The switch would only operate intermittently. After the switch was replaced, an operational test proved the system was serviceable. The submitter stated the switch is located in the open gear well which is in the engine exhaust gas path. This defect was attributed to these conditions.

Part total time not reported.

Cessna; Model 182; Skylane; Fatal Weight-and-Balance Error; No ATA

The following article was submitted by the FAA Aircraft Certification Office located in Wichita, Kansas. The information resulted from an aircraft accident investigation and a subsequent FAA Safety Recommendation 97.313.

The aircraft, carrying five parachutists, crashed shortly after takeoff and there were no survivors.

During the accident investigation it was determined that the aircraft had been operated out of the gross weight and center-of-gravity limitations. Owners and operators of aircraft used for sport jumping should ensure that their aircraft are operated within the gross weight and center-of-gravity limitations published by the manufacturer. Aircraft are designed to provide safe operation through a well defined set of parameters.

Aircraft total time not reported.

Cessna; Model 310R; Rudder Pedal Failure; ATA 2720

When the aircraft engines were started for ground movement, the left rudder pedal at the pilot's position broke.

The rudder pedal (P/N 0861700-40) separated at the base where it was welded to the rudder pedal arm assembly. It is believed this part was installed as original equipment when the aircraft was new in 1978. The submitter did not offer an opinion concerning the cause of this failure; however, similar defects have been found with other aircraft. Since the aircraft is 20 years old, metal fatigue may have been a factor. Older aircraft deserve a more rigorous inspection for age, metal fatigue, corrosion, and wear-related defects. Low time aircraft that have been in service for several years may also exhibit these problems.

Part total time-5,980 hours.

Cessna; Model 340A; Wing Structure Corrosion; ATA 5720

While investigating the source of a fuel leak on the right wing, the technician discovered severe corrosion.

The fuel leak originated at the right nacelle fuel tank. The access cover, fuel cell liner, and heat shield were removed, and the technician discovered fuel cell corrosion on the surrounding metal structure. The corrosion had attacked the upper wing skin, stringers, and the fuel cell liner. The submitter stated the corrosion had progressed to the point of compromising the structural integrity of the wing. The submitter also inspected the left wing and discovered the left wing was corroded, the upper spar cap displayed exfoliation corrosion, the aft side of the engine firewall was discolored by excessive heat, and the left nacelle fuel cell heat shield was burned through the metal. The submitter suspected that the heat related damage was the result of a previous engine exhaust system failure.

Aircraft total time-2,095 hours.

Cessna; Model 340A; Engine Oil Leak; ATA 7920

During flight, the right engine lost oil pressure. The pilot secured the engine and made a safe single-engine landing.

An investigation revealed that the oil pressure line to the instrument panel indicator was the source of the leak. The line (P/N 5300108-16) had corroded through the wall thickness under the cabin floor on the right side. At the point of damage, the line was routed over the cabin pressurization duct. The submitter speculated that the corrosion was due to condensation caused by the large variance of temperature at this location.

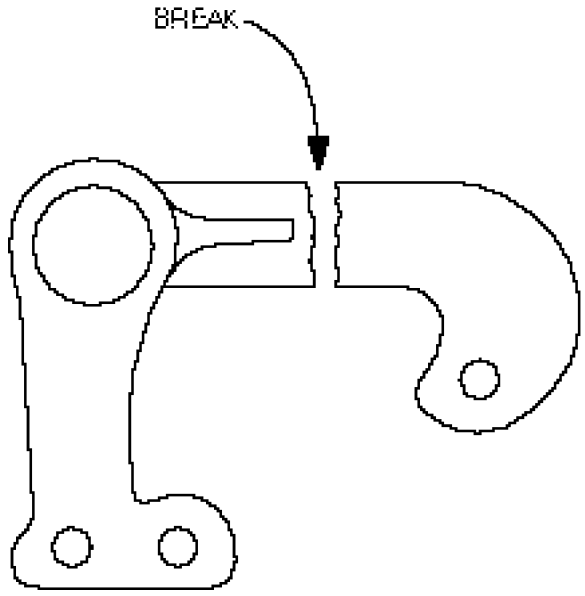
Part total time-4,642 hours.

Cessna; Model 421B; Golden Eagle; Landing Gear Door Linkage Failure; ATA 3231

After a flight, it was discovered that the right main landing gear door linkage was broken.

The upper arm of the door bellcrank (P/N 0841106-6) was fractured. (Refer to the following illustration.) The submitter stated it appeared this failure was the result of a pre-existing crack. The submitter stated that the crack may have been caused by metal fatigue. This area should be thoroughly inspected.

Part total time-5,549 hours.



DASSAULT

Dassault; Model 20; Falcon; In-Flight Door Opening; ATA 5230

After takeoff, the cargo door opened approximately 12 inches; however, the door was prevented from opening further by a cargo net that was attached to the door and a tie-down attachment. When the door opened, unsecured material in the cabin was ingested into the left engine. The pilot made a safe landing.

An investigation and operational test of the door-latching mechanism did not produce a cause for the cargo door to open. When the technician spoke to the crew that secured this aircraft, it was determined that the cargo door had not been locked prior to departure.

Part total time not reported.

LAKE

Lake; Model LA 4-200; Buccaneer; Elevator Control Failure; ATA 2730

The pilot reported that while climbing through 400 feet above ground level (AGL) after a normal water takeoff, an abnormal noise was heard. The aircraft pitched nose down approximately 90 degrees. There was no response when the control yoke was pulled aft. After continued effort, more noises were heard and the elevator control responded. The aircraft was leveled off at approximately 50 feet AGL. An immediate water landing was made in a confined area of a river.

An examination of the aircraft revealed that the upper ear of the left horizontal stabilizer attachment fitting (P/N 2-2200-021) had cracked and separated from the fitting. The structure of the horizontal stabilizer indicated that the stabilizer may have obtained as much as a 45 degree negative dihedral. In addition to the loss of horizontal stabilizer tail down force, the negative dihedral could have induced a down elevator condition as well as restricting elevator movement. The weld that attaches the left elevator to the center elevator horn was also found broken.

A detailed inspection of the horizontal stabilizer and the broken attachment fitting indicated that a crack may have been caused by the fitting contacting the bend radius of the top beam (P/N 2210-084) installed between horizontal stabilizer and the fitting.

Eighteen other aircraft of the same make and model were visually inspected for similar defects and none were detected. It was noted that these aircraft displayed an inconsistency of vertical location of the attachment fitting relative to the spar beam and angle. All operators of like aircraft should inspect this area as soon as possible.

PIPER

Piper; Model PA 11; Fuel System Failure; ATA 2820

Following a fatal aircraft accident, several fuel system hoses were found to be plugged.

The interior lining of these hoses (MIL-6000) was deteriorated and swollen. These hoses were manufactured in 1977 and 1986. The aircraft had been operated on “auto fuel” for approximately 5 years. The submitter stated his skepticism of using “auto fuel” for aviation and cited the variance of product quality as a possible factor in this failure.

Part total time not reported.

Piper; Model PA-12; Super Cub; Engine STC Additional Information; ATA 7100

In the December 1997 edition of this publication, an article appeared on page 9 concerning Supplemental Type Certificates (STC) SA4-519 and SA4-456.

These STC's deal with the installation of Textron Lycoming Model O-320 engine on the Piper PA-12 aircraft. When originally issued, these STC's allowed only for the installation of the O-320 engine, and subsequent dash numbers were not applicable.

Since the publication of the December 1997 article, the STC holder, Kenmore Air Harbor, has obtained an amendment to STC 4-456 which allows installation of the following engine models: 0-320-A1B, A2A, A2C, A2D, C1A, C1B, C2A, C2B, and C2C.

Any owner/operator affected by this change should take appropriate action.

Piper; Model PA 24-250; Comanche; Seat Rail Support Cracks; ATA 5347

During an annual inspection, the pilot's seat rail support was found cracked at two locations.

The cracks were located under the left rail at fuselage station (FS) 77 and 87. The cracks were adjacent to the flange area around the seat rail attachment nut plates. This area deserves your full attention during scheduled inspections and maintenance.

Part total time not reported.

Piper; Model PA 28-140; Cherokee; Fuel Quantity System Failure; ATA 2842

The pilot reported the right fuel tank quantity indicator suddenly went to empty.

Maintenance technicians visually verified the right tank to be approximately one-half full. The tank was filled; however, the gauge still indicated empty. The problem was traced to the fuel quantity sending unit (P/N 68101-02) in the right fuel tank. The float had worn through and fallen off of the sending unit arm. Fuel quantity anomalies should always be taken very seriously. Many times it is tempting to "rationalize" a problem and continue the flight even though in the back of our mind, we know better! When problems are encountered during flight, discretion is definitely greater than valor!

Part total time not reported.

Piper; PA 28-151; Warrior; Aileron Corrosion; ATA 5751

Information for this article was furnished by the New Piper Aircraft, Inc.

New Piper has received two reports of exfoliation corrosion occurring on the unpainted portion of the aileron hinge brackets (P/N 35249-00). These reports concerned aircraft operating in New Zealand.

In order to inspect for this condition, it is necessary to remove the wingtips and/or fuel tanks and inspect the hinges for corrosion by using a flashlight and mirror. Surface corrosion to a depth of no more than .025 inch can be polished out and the bracket painted with primer. More severely corroded brackets must be replaced, and a service difficulty report should be submitted. For further information, contact: New Piper Aircraft, Inc.; 2926 Piper Drive; Vero Beach, FL 32960.

The time in service for the occurrence of this defect may vary from 4,500 to 16,500 hours.

Piper; Model 28-160; Cherokee; Wing Flap Corrosion; ATA 5753

While replacing the skin on the left wing flap due to hail damage, the submitter discovered severe corrosion.

The corrosion was on the flap interior that had penetrated the outboard rib (P/N 62328-01) on the inboard hinge bracket (P/N 6234-00). The submitter stated the severity of this corrosion could have led to structural failure of the flap. The interior of the wing flaps is not accessible during routine inspections; therefore, the area should be thoroughly inspected any time a skin panel is removed.

Part total time-3,211 hours.

Piper; Model PA 34-200T; Seneca; Defective Empennage Fasteners; ATA 5530

The New Piper Aircraft, Inc., furnished the information for the following article.

The four rivets attaching the vertical stabilizer skin to the main spar root fitting on both the left and right sides were found sheared. This defect occurs on early Seneca II models (S/N's 34-750002 through 34-8070251) where flush rivets are installed with shop heads on the outside surface. Also, this may occur on all of the PA 34-200 Seneca I aircraft which have the same style rivets installed.

In some cases, the condition was found because the shop heads were missing; however, it was also found that the rivets were sheared between the fitting and the skin with paint still holding the heads in place.

Any sheared rivets found should be replaced, and a service difficulty report should also be submitted to determine if additional maintenance information is warranted. For additional information on this subject, contact: New Piper Aircraft, Inc.; 2926 Piper Drive; Vero Beach, FL 32960.

The time in service for these failures may vary between 4,500 and 16,500 hours.

Piper; Model PA 34-200; Seneca; Wing Rib Damage; ATA 5712

During a 100-hour inspection, a rib on the right wing was found severely cracked.

The rib (P/N 78500-003) is located just outboard of the right main landing gear attachment point. The crack ran from the lower right forward edge of the rib diagonally to the top center. The submitter stated the aircraft was used almost exclusively for flight training and suspected the damage was caused by an unreported hard landing. Even though the new replacement part has the same part number, it was constructed significantly stronger.

Part total time-2,474 hours.

Piper; Model PA 34-220T; Seneca V; Engine Oil Pressure Loss; ATA 7931

The pilot reported that during takeoff, the left low oil pressure warning sounded, and the oil pressure gauge indicated zero. The pilot made a safe landing.

During an investigation, the submitter discovered that the oil system breather pipe was "frozen." The night prior to this incident, the aircraft was parked in a hangar, and a heater was placed on the engine. Prior to this incident the aircraft was parked outside approximately 45 minutes in cold conditions. The oil breather system incorporates an air/oil separator. The submitter suspected that moisture was produced when the warm aircraft was parked outside. The moisture froze and blocked the breather pipe.

Piper issued Service Bulletin (SB) 1013 which requires the installation of the following additional parts: two caps (P/N 688-482), two hoses (P/N 63913-176), two breather tubes (P/N 37190-00), and two clamps (P/N 454-868). Piper is offering compliance with SB 1013 under the aircraft warranty at no cost and encourages all operators of like aircraft to comply. There are approximately 43 aircraft to which SB 1013 applies.

Part total time-232 hours.

Piper; Model PA 44-180; Seminole; Defective Oil Filter; ATA 7920

During an engine oil change, the submitter discovered a defective right engine oil filter (P/N CH48103).

After removing the oil filter and prior to cutting it open for inspection, the technician noticed foreign material at the open end of the filter. Further inspection disclosed that the foreign material was debris from the seal installed between the top of the filter can and the element. Deterioration of this seal may allow unfiltered oil to be supplied to the engine lubrication system along with the dislodged seal material.

Part total time-50 hours.

Piper; Model PA 46-310P; Malibu; Engine Oil Scavenge Pump Failure; ATA 8550

During an engine operational test, the submitter discovered oil coming from both of the turbocharger outlets and the waste gate seal drain.

It was determined that the oil system scavenge pump (P/N 640766A4) had failed. When the scavenge pump was removed and disassembled, the end bearing was found to be "loose" which

caused the pump to fail by venting the “suction pressure.” The retaining clip for the end bearing was missing and there was no groove in the pump housing to accommodate the retaining clip. The origin and disposition of the scavenge pump housing was not reported. The engine installed in this aircraft was a Teledyne Continental Model TSIO-520.

Part total time-821 hours.

HELICOPTERS

BELL

Bell; Model 47-G5; Engine Failure; ATA 8011

Information for the following article was furnished by Mr. Rocco Viselli from the FAA Aircraft Certification Office, ANE-170, located in Valley Stream, New York. This information was the subject of two FAA Safety Recommendations 97.036 and 97.037.

After a sudden and complete loss of engine power, the pilot made a forced landing. The aircraft sustained substantial damage.

A Textron Lycoming Model VO-435-B1A engine was installed in this helicopter. An inspection revealed that the six bolts (AN4-4A) which retain the gear assembly (P/N 76327) on the starter drive had sheared. The three dowel pins (P/N 76323) were worn and fell out of the assembly. Research of the Service Difficulty Program data base found two similar occurrences. These occurrences were attributed to improper installation of the locking tabs over the dowel pins and improper torque of the retaining bolts.

The starter, starter drive housing, and the starter drive should be removed during the next 100-hour inspection. The six retaining bolts should be inspected for proper torque, and the dowel pin locking tabs should be inspected for proper installation.

Part total time not reported.

Bell; Models 206L-1, -L3, and -L4; Long Ranger; Possible Tail Boom Cracks; ATA 5302

Information for this article was furnished by the FAA Rotorcraft Certification Office, ASW-170, located in Fort Worth, Texas.

Bell Helicopter Textron issued Alert Service Bulletin (ASB) 206L-96-105, dated December 2, 1996, which deals with helicopters that have the following serial numbers: Model 206L-1 S/N 45154 through S/N 45790, Model 206L-3 S/N 51001 through S/N 51612, and Model 206L-4 S/N 52001 through S/N 52187. Any of these helicopters which have been modified by the installation of Tridair Helicopters, Inc., Supplemental Type Certificate (STC) SR00036SE (Twin Engine Conversion Kit) may be affected by this ASB.

Bell received a report that a helicopter with STC SR00036SE conversion kit installed had developed a crack on the tail boom assembly at the horizontal stabilizer opening area. An investigation of another report revealed that pre-load conditions may exist on the upper and lower tail boom skins. The pre-load conditions measured during flight testing were attributed to the addition of a doubler which was bonded to the lower surface of the modified horizontal

stabilizer as part of the twin engine conversion. Also, improper fit of the lower supports (P/N's 206-023-100-119 and -110) contributed to the pre-loading conditions. If not corrected, the pre-load conditions may result in tail boom skin cracks.

Part total time not applicable.

Bell; Model 407; Preflight Checks; ATA 6210

Information for this article was furnished by the FAA Rotorcraft Certification Office, ASW-170, located in Fort Worth, Texas.

Bell Helicopter Textron issued an Operational Safety Notice, 407-97-3, dated November 11, 1997. This notice was issued to emphasize the importance of the preflight check. The "cabin roof" section of the flight manual requires an inspection of the "Main Rotor Blade and Skin Condition." "Inspect Condition" in this section means to inspect the main rotor blades for cleanliness, obvious damage, possible debonding, or skin cracks. The skin condition on the blade is to be inspected on both the top and bottom skin in all areas. This includes the leading edge, trailing edge, root area, tip area, and trim tab area. When standing on top of the helicopter, it is equally important to inspect the condition of the main rotor blade skin along the entire length of the blades, both top and bottom. In the future, Bell will issue revisions to their Maintenance, Overhaul, and Flight Manuals to reflect the intent of Notice 407-97-3.

SCHWEIZER

Schweizer; Model 269-C; Engine Failure; ATA 8550

Information for this article was furnished by the FAA Aircraft Certification Office, Engine and Propeller Directorate, located in Valley Stream, New York.

The engine installed in this helicopter was a Textron Lycoming Model HIO-360-D1A. During an accident investigation, an oil leak was found at the engine accessory section on the base of the oil pressure screen housing. Further investigation revealed that the internal locking washers commonly referred to as "star washers" (P/N STD-160) which were used on the oil pressure screen attachment fasteners may have lost their locking capabilities. Due to vibration, the housing attachment fasteners loosened.

"Star washers" can be crushed under normal torquing pressures which makes the locking function ineffective. These lock washers are designed with tabs deflected up and down and at an angle to provide a spring action. The tabs have a hardened cutting edge which retains the fastener under normal conditions. The spring tabs of the washer are displaced when torque is applied to the fastener and can lose their locking capability after their first use. In addition, the effectiveness of the washer to retain the fastener is affected by the operating environment, e.g., high temperatures and/or differentials and vibration. All safety devices, including lock washers, should be discarded when they are removed.

Part total time not applicable.

AMATEUR, EXPERIMENTAL, AND SPORT AIRCRAFT

GLASAIR

Glasair; Model III; Nose Landing Gear Failure; ATA 3230

The pilot reported that during a landing approach, a "nose gear unsafe" indication was observed. When the nosewheel contacted the runway, the nose landing gear collapsed.

An investigation revealed that a hydraulic fitting located under the cockpit floor between the two pilot seats was loose and leaking. Evidently, the fitting had been leaking for some time, and the hydraulic system fluid had been depleted. Although both main landing gear attained the "down-and-locked" position, it appeared the hydraulic system failed before the nose gear achieved the "overcenter-and-locked" position. Further inspection disclosed that the aircraft was not in compliance with the manufacturer's Service Bulletins (SB) 100 and SB 103. SB 100 refers to a "Check of the Landing Gear Overcenter Condition," and SB 103 refers to a "Nose Gear Overcenter Spring." Although this incident was initially caused by the hydraulic fluid depletion, it may have been avoided if the aircraft was in compliance with SB 100 and SB 103. Service bulletins should not be ignored.

Part total time-282 hours.

QUESTAIR

Questair; Model 20; Nose Landing Gear Failure; ATA 3222

The pilot stated that prior to flight, the nose landing gear strut was "flat." A maintenance technician serviced the strut and the flight was initiated.

After takeoff, the red landing gear warning light remained illuminated when the landing gear was retracted. The pilot elected to continue the flight to the destination airport. When the nose landing gear contacted the runway, it collapsed. The pilot received minor injuries, and the aircraft sustained substantial damage. The available evidence suggested that after the nose gear strut was serviced, it may have leaked due to a crack or failure of a seal.

Part total time not reported.

REVOLUTION

Revolution; Model Mini 500; Engine Failure; Engine Rotax; Model 582; ATA 8510

The engine failed during flight, and the pilot successfully initiated an emergency autorotation landing.

The engine was removed and sent to a Rotax Service Center for evaluation and repair. A Rotax Service Center representative stated that the rear counterweight separated from the crankshaft. The representative further stated, "This failure is attributed to the way the

manufacturer installs the bearing on the end of the clutch." The bearing is held stationary and does not allow for "wobble" movement at the end of the crankshaft when it does not "turn true."

Engine total time-14 hours.

SPORTFLIGHT AVIATION

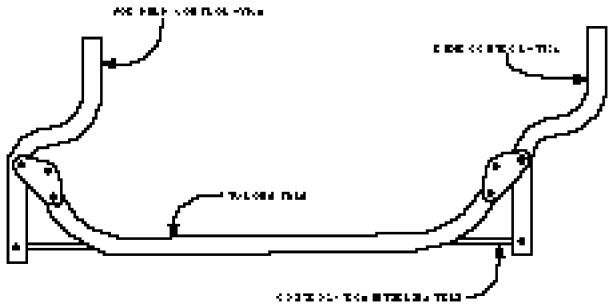
Sportflight Aviation; Model Talon XP; Flight Control System Failure; ATA 2700

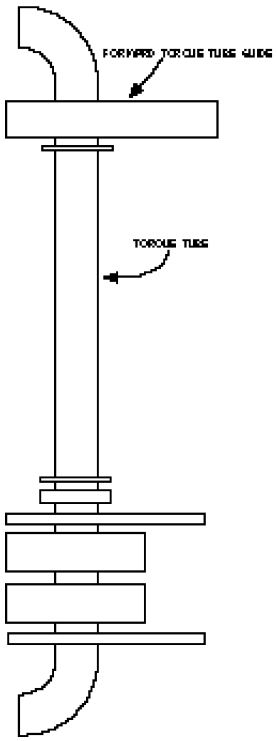
During flight, the flight control system torque tube failed and caused the complete loss of aileron and elevator control. The pilot activated the "Ballistic" recovery parachute, and the parachute functioned properly and saved life and property.

This aircraft kit was designed for installation of a forward and aft flight control stick. An investigation disclosed that the builder installed only the forward control stick and omitted the "interlink" tube. This eliminated two of the four sides of the structurally integral "box" (torque tube, interlink tube, and the fore-and-aft control sticks).

The forward end of the torque tube and the flight control stick separated due to "torsional loads." The aircraft kit assembly instructions did not caution the builder to install both fore-and-aft control sticks to the torque tube and interlink tube. (Refer to the two following illustrations.) The same flight control configuration is used on three kit models (Talon Magnum, Talon Super Magnum, and Talon XP) offered by this manufacturer. Since this occurrence, the manufacturer has issued a modification kit which replaces the torque tube with a thicker wall tube, reduces the cutout slot size at the torque tube radii outer bends, and provides for a doubler in the radii area for extra strength.

Part total time-70 hours.





STARDUSTER

Starduster; Model 300; Engine Oil Loss; Engine Teledyne Continental; Model E225; ATA 8550

When the pilot started the engine, an engine oil leak occurred. The oil pressure decreased to zero, and the pilot shut down the engine; however, all of the engine oil was lost.

An inspection revealed that the oil filter burst, the gasket was forced out of the retaining groove, and the oil filter “domed out” at both ends. The oil cooler and the engine oil system passages were open and clear, and the oil system pressure relief valve was functioning properly. The submitter suspected the oil filter bypass system malfunctioned and caused this problem.

Part total time not reported.

PROPELLERS AND POWERPLANTS

TELEDYNE CONTINENTAL

Teledyne Continental; Model GTSIO-520; Nonstandard Main Bearings; ATA 8520

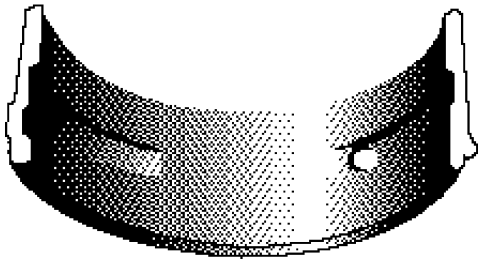
While preparing the engine for assembly, the maintenance technician noticed that a new main bearing insert was not normal.

A closer examination revealed that the bearing (TCM P/N 634503-M010) had only one oil hole. (Refer to the following illustration.) These bearings are supposed to have two oil holes, one for oil supply to the crankshaft and one for oil supply to the piston cooling nozzle. Within one week, the submitter discovered two main bearings with this defect. The defective main bearings were found in bearing sets which had been shipped directly from the manufacturer.

We contacted the manufacturer concerning this report and their investigation disclosed that there could be other defective bearings in the possession of parts distributors or others. At this time Teledyne Continental is working with the FAA to locate these suspect bearings. Teledyne Continental has issued a bulletin to their customers concerning this subject.

The bearings are identified as coming from lot number “10-97.” The manufacturer's supplier, who fabricated the bearings, supplied 1,174 bearings identified as lot number “10-97.” Of that number, 682 have been located and inspected. There are still 492 bearings unaccounted for. All entities are urged to check their stock for any bearings part number 634503-M010, lot number “10-97,” which were designed for the GTSIO-520 engine. If any of the subject bearings are found, please notify your Teledyne Continental representative as soon as possible so that this search may be completed promptly.

Part total time not applicable.



AIR NOTES

AIRWORTHINESS DIRECTIVES (AD'S) ISSUED IN FEBRUARY 1998

97-15-15; Eurocopter France SA-365 and SA-366 models which requires inspection of main gear box magnetic plug and gear box oil filters.

97-24-06; Glasflugel models Standard Libelle sailplanes which requires inspecting aileron operating levers.

98-02-05; Cessna 172R airplanes which requires deactivating the cabin heating system.

98-03-14; Extra Flugzeugbau EA-300 airplanes which requires inspecting upper longeron cutout bridge for cracks.

98-03-16; Piper PA-38-112 airplanes which requires replacing upper rudder hinge bracket.

98-04-01; Extra Flugzeugbau EA-300 airplanes which requires modifying canopy latches.

98-04-02; HOAC Austria Model DV 20 Katana airplanes which requires replacing nosewheel leg of nose landing gear.

98-04-03; Socata TB series which requires inspecting bolts and spacers of upper attachment of front belts.

98-04-04; SOCATA TBM 700 airplanes which requires replacing starter generator mounting adapter.

98-04-05; Fairchild SA226 models which requires inspecting center flap hinge and wing trailing edge ribs.

98-04-16; Pilatus PC-12 and PC-12/45 airplanes which requires inspecting aileron tie rod jamnuts.

98-04-17; Pilatus BN-2 series which requires installation of higher capacity diodes on generator switches.

98-04-18; Aerospace Technologies N22 series which requires revising airplane flight manual (AFM) to prohibit flight in severe icing conditions.

98-04-19; Harbin Y12 airplanes which requires revising AFM to prohibit flight in severe icing conditions.

98-04-20; Partenavia Model 68 series which requires revising AFM to prohibit flight in severe icing conditions.

98-04-21; Pilatus BN-2 series which requires revising AFM to prohibit flight in severe icing conditions.

98-04-22; SOCATA TBM 700 series which requires revising AFM to prohibit flight in severe icing conditions.

98-04-23; Aerostar PA-60 series which requires revising AFM to prohibit flight in severe icing conditions.

98-04-24; Raytheon (Beech) 55, 58, 60, 90, 10, 300, and B300 series which requires revising AFM to prohibit flight in severe icing conditions.

98-04-25; Raytheon (Beech) 2000 series which requires revising AFM to prohibit flight in severe icing conditions.

98-04-26; Piper PA-46 series which requires revising AFM to prohibit flight in severe icing conditions.

98-04-27; Piper PA-23, PA-30, PA-39, and PA-40 series which requires revising AFM to prohibit flight in severe icing conditions.

98-04-28; Cessna T300 and 400 series which requires revising AFM to prohibit flight in severe icing conditions.

98-04-30; Glaser-Dirks DG-500M gliders which requires inspecting propeller mounting for cracks.

98-04-40; PLEurocopter France SA300 and SE 3000 series which requires inspecting blade spar for cracks.

98-04-46; Alexander Schleicher ASW-19 sailplane which requires modifying inspection hole cover in fuselage area.

98-04-47; SOCATA TB series which requires inspecting main landing gear support for cracks.

98-04-14; Pratt & Whitney PW4100 series which requires inspections for damaged front pylon mount bolts.

98-04-39; Pratt & Whitney JT8D series turbofan engines which requires Borescope inspection.

98-04-15; Allied Signal TPE331 and TSE331 turboshaft engines which requires inspection of third stage turbine stators.

98-04-48; Eurocopter France AS332L2 helicopters which requires modifying main rotor blade vibration absorber.

98-05-01; Eurocopter France SA-366G1 helicopters which requires inspecting frequency adapter.

98-04-12; Robinson R44 helicopters which requires inspecting spring assembly.

AVIATION MAINTENANCE TECHNICIAN (AMT) AWARDS CONTEST

The Federal Aviation Administration (FAA) and the National Association for Stock Car Auto Racing (NASCAR) have teamed up to provide exceptionally nice prizes for the 1998 Aviation Maintenance Technician (AMT) Awards Contest. Many private companies have cooperated to donate these prizes.

The FAA and NASCAR AMT Awards Contest was begun in 1997 and was the brainchild of Mr. Phil Randall who is an Airworthiness Aviation Safety Program Manager (ASPM) with the FAA Flight Standards District Office (FSDO) located in Winston-Salem, North Carolina. This is a nation-wide contest and all Aviation Maintenance Technicians (AMT's) are invited to participate. For specific details contact the ASPM at your local FSDO. Also, Advisory Circular (AC) 65-25A, Aviation Maintenance Technician Awards Program, gives more specific information on the program requirements.

In 1997, it was found that the FAA's Airworthiness Aviation Safety Programs association with NASCAR's Winston Cup Racing series was a huge success. The 2,581 entrants in the awards contest accounted for over 160,000 hours of maintenance training received during 1997. The drawing for the 505 winners was held during the first week of December.

Now it is time to announce the prizes for the FAA's 1998 AMT Awards Contest.

THE GRAND PRIZE: A trip for the winner and three guests that will begin with a trip to Orlando, Florida on June 28, 1999, and end with their return home on July 4, 1999. This trip will include round trip airfare provided by United Airlines, rental car, two hotel rooms provided by Atlantic Aero.; day passes to Disney World, Epcot Center, and MGM Studios provided by Disney; and Very Important Person (VIP) tickets to the July race at the Daytona International Raceway provided by NASCAR.

FIRST PLACE PRIZE: The winner and a guest will attend the 1999 Reno Air Races. This trip includes round-trip airfare provided by United Airlines, a rental car, hotel room, and passes to the Air Races provided by Atlantic Aero.

SECOND PLACE PRIZE: The winner and a guest will attend Sun 'N Fun '99. This will include round-trip airfare, hotel room, passes to Sun 'N Fun '99 provided by Atlantic Aero., and a rental car.

THIRD PLACE PRIZE: The winner will attend the Flight Safety International Course entitled "Maintenance Resource Management" at a location to be determined. This prize is provided by Flight Safety International.

FOURTH PLACE PRIZE: Each of 100 winners will receive a special contest golf shirt provided by Atlantic Aero.

If you would like a chance to win one of these great prizes, all you have to do is earn one of the FAA's AMT Awards for training received between October 1, 1997, and September 30, 1998.

Good training and luck to all!

IF YOU WANT TO CONTACT US

If you want to contact the staff of this publication we would welcome your comments, suggestions, and questions. Also, you may use any of the following means of communication to submit reports concerning aviation-related occurrences.

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Oklahoma City, OK 73125-5029

AFS-600 HomePage Internet address:

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Current and back issues of this publication may still be obtained from the FedWorld Bulletin Board via the Internet at the following address:

http://www.fedworld.gov/ftp/htm

Please do not hesitate to contact us.

SUSPECTED UNAPPROVED PART (SUP) SEMINAR

As announced in previous editions of the Alerts, the Designee Standardization Branch, AFS-640, is once again presenting the Suspected Unapproved Part (SUP) seminar. A schedule of the seminars and information for requesting a SUP seminar in your area can be found below.

Seminar dates will be announced in the Alerts, the Designee Update Newsletter, and on the Internet under FedWorld.gov. You may access the FedWorld BBS directly at (703) 321-3339. You may access the Alerts through the Internet, using the Regulatory Support Division, AFS-600, “HomePage” at the following address.

http://www.mmac.jccbi.gov/afs/afs600

The seminar will discuss the following:

1. Introduction to the policy of the Suspected Unapproved Part Program Office, AVR-20.
2. What is an approved part/unapproved part? How can approved parts be produced?
3. What is a suspected unapproved part?
4. How is a suspected unapproved part reported in accordance with FAA Order 8120.10A, Suspected Unapproved Parts Program, and utilizing FAA Form 8120-11, Suspected Unapproved Parts Notification?
5. How do you determine the status of parts?
6. What is the procurement process?
7. How do you use the Internet and FedWorld to find a list of unapproved parts?

The cost of this 8-hour seminar will be $60. The seminar may be used for the Inspection Authorization (IA) renewal training requirement specified in Title 14 of the Code of Federal Regulations (14 CFR) part 65, section 65.93(a)(4).

The seminar is open to the aviation industry. Anyone wishing to attend may telephone (405) 954-0138. Payment is required in advance by using VISA, MasterCard, or a check. **When scheduling attendance, please reference "AFS-75."**

SCHEDULE FOR SUSPECTED UNAPPROVED PART (SUP) SEMINAR

Seminar No.	1998	Location
759804	Apr 22	Charleston, WV
759805	May 13	Cleveland, OH
759806	Jul 15	Seattle, WA
759807	Jul 17	Anchorage, AK
759808	Aug 5	Ft. Lauderdale, FL
759809	Sep 16	Springfield, IL
759901	Oct 21	Rochester, NY
759902	Nov 18	Wichita, KS

The following are ADDITIONAL SUP seminars which will be conducted during the month of June: Atlantic City, NJ on 6/2/98 and 6/3/98 and Minneapolis, MN on 6/16/98 and 6/17/98. You may register for the seminar by calling (405) 954-0138. These additional SUP seminars are 1-day, 8-hour seminars and can be used to meet IA renewal requirements.

If you require additional or special SUP seminars, please write to: FAA; ATTN: Mr. Elmer Hunter (AFS-640); P.O. Box 25082; Oklahoma City, OK 73125. Depending on manpower and the availability of AFS-640 personnel, the requests for additional SUP seminars may be authorized. The cost for the additional SUP seminars is $60 per person. We would like a minimum of 40 attendees for a 1-day seminar and no more than 60 attendees. When the number of attendees is greater than 70, we will conduct two 1-day seminars. The registration process is the same as previously discussed in this article. If you have specific questions regarding an additional SUP seminar, please contact Mr. Elmer Hunter at (405) 954-4099.

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For your convenience, FAA Form 8010-4, Malfunction or Defect Report, will be printed in every issue of this publication.

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FEDERAL AVIATION ADMINISTRATION

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1. A/C Reg. No. N-

Enter pertinent data:	MANUFACTURER	MODEL/SERIES	SERIAL NUMBER
2. AIRCRAFT			
3. POWERPLANT			
4. PROPELLER			

5. SPECIFIC PART (of component) CAUSING TROUBLE

Part Name	MFG. Model or Part No.	Serial No.	Part/Defect Location

6. APPLIANCE/COMPONENT (Assembly that includes part)

Comp/Appl Name	Manufacturer	Model or Part No.	Serial Number

Part TT	Part TSO	Part Condition	7. Date Sub.

8. Comments (Describe the malfunction or defect and the circumstances under which it occurred. State probable cause and recommendations to prevent recurrence.)

Optional Information:

Check a box below, if this report is related to an aircraft

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